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ABSTRACT

The paper presents a review of the evaluation research on programs for young (preschool through grade 3) gifted children. Questions addressed concern the effectiveness of various program approaches on measures of general and specific abilities and the nature of existing reports. Topics reviewed include grouping strategies, preschool programs for the gifted, elementary mathematics programs, directions and trends in programming, social studies programs, inter-age grouping, resource rooms and pull-out models, and staff development issues. The review led to the following recommendations: (1) Both enrichment and acceleration strategies can be effective if individualization occurs. (2) Preschool programs should employ liberal entrance requirements. (3) Interage grouping and early entrance strategies should be employed based on readiness criteria. (4) Teachers in regular and advanced programs can be trained to be more aware of needs of young gifted students. It is concluded that the current literature strongly supports the case for special services with gifted children in terms of both academic achievement and positive attitudes toward learning. (DB)

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A REVIEW OF PROGRAMS FOR
YOUNG GIFTED CHILDREN

by

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I. Overview of Research Plan

A comprehensive coverage of the literature was planned and completed in addressing the area of evaluation research on gifted programs for the young. The first question addressed in the present review dealt with possible extant research on the effectiveness of various program approaches on measures of general and specific abilities. As expected, very little sound data are available in the above area. Karnes and Zehrbach's (1975) research is unique in a design that compared open education and structure of intellect (SOI) instructional programs with a conventional public school kindergarten programs in Illinois. The results did not indicate a practically or statistically significant difference among groups although socio-economic differences were found, using the Illinois Test of Psycholinguistic Abilities as the outcome measure. Personal contact was established with Dr. Karnes to inquire about any other subsequent research on gifted education approaches with the young. She was not aware of any comparative program evaluations outside what was being done at the University of Illinois. Her suggestions for program planning and content are described in a later section.

A second major program evaluation pertinent to the goal of the review centered on the Astor Program for Gifted Children which attempted to compare the growth rates of gifted and regular high achieving children. The program served 667 children identified as gifted using Stanford-Binet scores above 140, between preschool and the third grade. In spite of serious limitations in evaluation, the

results appeared face valid and positive. The program employed a resource center and provided a special school for highly able students who made significant gains in reading, math, vocabulary and developed positive attitudes toward learning.

Thirdly, a program evaluation of the Comprehensive School Mathematics Program (Daugherty and Herbert, 1983) is described which involved 3 school districts in Missouri for 261 gifted elementary students. Program content and achievement data are summarized in the Specific Abilities section. A fourth study was found involving gifted preschoolers (Larsen, Hite & Hart, 1983) and again, no program effects on intellectual outcomes was found.

In lieu of adequate research data for program comparisons, the second question addressed by the present review concerns the nature of the existing reports. That is, an effort was made to provide the reader with summaries of typical evaluations in the literature, notwithstanding their limitations. This was done partly due to the scarcity of adequate research and also to draw attention to the need for well designed evaluations in the future.

The present review was based on library searches of the ERIC and Exceptional Children data bases, sources found from the last report on identification, and review of current issues of journals in this field. Of thousands of reports on gifted education and program evaluation, about thirty documents were found to involve preschool and elementary students. Of these, only the above four reports contained evaluation data that approximated the criteria set for the review which were necessary for making sound recommendations.

OVERVIEW OF APPROACHES FOR PROGRAM SERVICE

A number of approaches or administrative strategies have been developed in delivery services to gifted students. These approaches can be conceptualized as a set of arrangements that vary on the extent to which ability groupings are established during a school period. Related to research on ability groupings are enrichment and acceleration programs, in both general and specific abilities or content areas. Since program content, methods, staff training and participating student factors vary from one program to another, it is difficult to determine which of the different administrative arrangements work best. In the next session, the most common arrangements for ability grouping are briefly described.

The question of which arrangement works best for educating the gifted centers around the degree of separation from non-gifted peers. Clark (1983) has developed a Continuum Model for Ability Grouping that ranges from little separation in regular classrooms to total separation in special schools.

Basic Definitions

1. Grouping the gifted within a regular classroom is the first strategy. It is considered the least effective, particularly within a given grade level. However, when classes are non-graded and flexible and have competent, trained teachers, clusters of five to seven gifted students are considered adequate. Hence, the degree to which instruction is individualized appears to be a critical factor.

2. Pull-out for the gifted is a strategy that groups students at high ability levels typically in a given content area. The pull-out experience varies in that the student may be involved in a special class or seminar, resource room, field trips or a combination of these.

3. At the next level, both ability groupings (clusters) and pull-out are possible and increase the level of interaction with advanced peers. However, these arrangements may interrupt regular programming and lead to adjustment problems for those served.

4. Individualized classes offer flexibility and small group instruction for all students. It requires a manageable class size, resources and teacher competencies. As noted earlier, adding a special grouping arrangement for the gifted and a pull-out schedule increases the extent to which these students' needs are served. Less social problems are also to be expected.

5. Special classes in several content areas, along with regular classes offer an avenue to develop particular areas of giftedness. Sometimes these special classes may involve a pull out to a more advanced level or class.

6. Finally, special classes full-time are deemed most effective for the "highly gifted" and prevents social adjustment problems. Such classes or, at the next level, special schools are considered to provide a safe environment for the gifted student in which to fully develop and manifest their talents.

According to Clark's (1983) review of ability grouping with gifted students, based on dated studies, the following conclusions can be made:

- a) Grouping alone is not sufficient (or necessary?) to increase the achievement of gifted students.
Individualized programming is effective and necessary for that purpose.
- b) The amount of time spent in special groups or classes correlates positively with achievement gains.
- c) Ability group classes provide greater opportunities for concentrated study, acceleration and individual expression.
- d) Complete segregation is to be avoided
- e) Significant individual difference are to be expected even within clusters of gifted students.

As we shall see, little empirical evidence exists that supports Clark's conclusions above. Rather, the above points appear to be based on common sense.

II. Preschool Programs for the Gifted

From what we know about the intellectual development of children, it is clear that the earlier they are intellectually stimulated, the greater the chances are for developing cognitive potential. This is particularly true for children who manifest exceptional talents early in life. Motivation to learn, intellectual standards and positive self concepts are positively influenced by learning experiences that challenge the child. Currently there is a great concern for young gifted children in preschool and the early elementary grades whose needs are not being

met educationally. Jenkins (1979) found only twenty programs for kindergarten age children in the country while the U.S. Office of the Gifted identified three programs for preschoolers. Karnes, Shwedel and Linnemeyer (1981) found 18 centers with only a small percentage being served in organized programs. Consequently, it is estimated that a large proportion of children who may have extraordinary intellectual potential become underachievers and fail to develop intellectually relevant learning patterns and attitudes. As Gallagher (1975) notes "by the time the gifted underachiever has reached the middle elementary grades, his underachievement is a genuine lifestyle, and major educational readjustments or counseling over an extended period of time are often needed to change it (p. 363).

At this stage of development of gifted education, there are no research data with which to estimate directly the extent to which intellectual development is arrested with the gifted relative to the normal population when special programs are absent. It may be that those children who do succeed in maintaining their gifted status are those who are exposed to "hidden curricula" through which productive patterns and positive attitudes are fostered by parents and teachers. Nor are there empirical studies showing the relative advantage of one program over the other. Rather, we are at a stage where the question is centered around the relative advantages of some special programming over none at all for young gifted children. A related problem here remains conceptual. For instance, to what extent is giftedness developed by such special programming.

The above question is relevant to policy makers in that a guiding assumption in the present movement in gifted education is that giftedness is a "fait accompli" which requires cultivation. From another perspective, however, the development of gifted organized programs for young children may actually result in substantial increases in the number of gifted children to be served at a later time. That view is supported by developmental theory and leads to an emphasis on developing versus serving the gifted. At present, analysis of this literature only allows for describing the general philosophy, goals and methods used in the existing programs for young gifted children. Most of these programs are supported by parent fees and strive to accomplish goals that are important for all children. For our present purposes, a brief description of the Illinois preschool program for the gifted will be used to illustrate a state of the art model.

The Illinois program provides a differentiated curriculum that combines an open classroom approach (Cazden, 1970) with Guilford's structure of the intellect model (1967) for developing creativity and higher level thinking processes. Activities are designed to allow children to pursue chosen interests in depth, to develop persistence (or task-commitment), to accurately interpret the behavior and feelings of others and to broaden the base of knowledge. Similar programs also attempt to enhance language abilities (Rosenbusch and Draoer, 1985) and to develop divergent, convergent and evaluative thinking. Karnes' Illinois program is based on five sound principles;

Learning

- a) involves acting on the environment
- b) is developmental
- c) accustoms the child to decisions
- d) integrates knowledge
- e) is based on dialogue

Besides the Illinois program, several other preschool programs for the gifted have been described in the literature; the Roeper School in Seattle, the Astor Program in New York, The Preschool Program described in the earlier report to the Advisory Council. As noted before, none of them involve designs that allow for examination of program effects from an experimental perspective. Several of these programs have led to evaluations (Karnes, Shwedel, & Lewis, 1983); Kitano, 1984 and Vantasselbaska, Schuler, Lipshutz, 1982) that show, not surprisingly, that gifted children make academic, social and affective gains.

The effects of preschool for educationally advantaged children were studied recently at the Brigham Young Early Childhood Laboratory Preschool Program (Larsen, Hite & Hart, 1983). The program was described as a state of the art model that was traditional and eclectic and focused on discovery learning, science, reading math, music, language, art and motor skills. To evaluate the effects of the program, children were randomly assigned to treatment and control conditions and were found to be comparable in socio-economic, educational and intellectual characteristics. The Slosson Intelligence Test (a short version of the Stanford-Binet),

the Gessell School Readiness Test (a measure of the child's cognitive readiness for formal education), the California Preschool Social Competency Scale, a local measure of self-concept and the Test of Motor Abilities for Young Children were employed to assess intellectual and social competency gains. The results suggest that although some gains in social competency were found at the end of the preschool phase favoring the experimental group, none remained upon entrance to kindergarten. However, the control group was found to be superior to the treated group on two items of the social competency measure (The Gessell Test), a gain which was also washed out upon entrance into kindergarten. No advantages in intellectual ability were found to be associated with preschool program participation. Gains in social competency were found for both experimentals and controls in terms of the California Social Competency Scale and Gesell School Readiness Test. Results concerning the others measures employed were not reported.

Although it may be premature to conclude that preschool program participation is not beneficial in fostering the cognitive growth of the gifted (I.Q. Mean = 130), it should be noted that this is the second empirical report failing to find program advantages. It seems reasonable to assume that the curriculum employed in the Karnes and Brigham Young studies were adequate. However, given the already existing advantages in the cognitive environment of both control and experimental subjects and their high ability, it may be that a ceiling effect may exist at the group level.

Potential problems may be presented for both parents and children involved in such programs. After completion, overpreparation in preschool may lead to a poor transition to new settings unless provisions for acceleration and or enrichment have been established. Different criteria for selection into advanced programs represent another potential problem that requires careful attention by policy makers in program evaluations.

Elementary Math Program

A second program evaluation in this area of gifted education focused on mathematics in elementary schools (Doughtery and Herbert, 1983). The evaluation focused on student performance using the Mathematics Applied to Novel Situations (MANS), an instrument developed by CEMREL, Inc. to assess their Comprehensive School Mathematics Program (CSMP) at different sites in the Midwest. Elementary school students identified as well above average in general ability were found to have a strong advantage following the end of the program in probability, estimation and other number system. However, the areas of computation, word problems and number patterns and relationships showed less significant gains after using the experimental curriculum materials developed by this St. Louis-based national educational laboratory.

The research was based on student performance at three sites that varied in age level as well as program implementation. The first site involved 40 gifted children in grades 2 - 4 and provided 20-30 minutes every third day of supplemental enrichment using the CSMP. The second site involved 26 students, grades 2-6, and

provided 30-40 minutes twice a week of CSMP instruction. This was a pull-out program where children received acceleration in problem-solving skills in addition to traditional instruction. At the third site, teachers volunteered for training in CSMP methods, which determined which gifted classes were the "experimentals" in the evaluation. The CSMP method was used everyday during the whole math period and was supplemented to some degree by traditional materials.

For comparison purposes, student performance in the preceding year was used to estimate CSMP effects for the first site. The other two sites employed control classes. The second site showed the clearest advantage, a 32% increase in mean performance. Site three produced half as much of an increase, which appeared surprising while the first site show no practical advantage. The researchers did not employ significance testing procedures. However, an average 20% increase by experimentals, given the present sample size, would appear to be of marginal statistical and practical significance.

In sum, a non linear relationship was found between program exposure and achievement. It appears that a combination of traditional and CSMP programming worked best, something which leads to reservations concerning the CSMP curriculum. Finally, sampling procedures and the selected criterion measures pose serious threats to the internal validity of the study.

Directions and Trends in Programming

Outside of the above studies, little program effectiveness (comparative) data exists. Most other programs in the literature contain, in addition to program description, formative and process evaluation data that do not allow the reader to ascertain what outcomes may be expected (given potential adoption of the model in question). Often times, the evaluations of these programs focus on teacher/parent attitudes and perceptions or in affective characteristics of students. The majority of the models include some evaluation efforts addressed to specific program components such staff development, identification, family involvement and delivery of services. Some of the programs characteristic of the above trends also include a focus on particular content areas. The following sections briefly describe some of the major limitations found in current program evaluations.

The problem with the current state of knowledge in early gifted education lies in establishing reliable effect sizes for different program designs.

A relative lack of concern by researchers exists in planning gifted program evaluations that allow estimation of the effectiveness of a particular approach. Few school districts and state departments of education seem concerned about the theoretical or empirical basis of various models before they are adopted. Rather, the trend appears as one where a particular curriculum, identification and delivery system, and staff development model is selected and implemented and only later evaluated incidentally.

Program evaluations generally do not allow for comparisons between the program described and others. Several technical reports involving district or state-wide evaluation of gifted education programs can be found but they provide insufficient data for standard comparisons of delivery approaches. For example, a school district will provide evaluation reports containing rationale for a particular model, such as one based on the Structure of Intellect, or describe a pull-out schedule for gifted students attending a resource room. However, the evaluation is typically inadequate in providing evidence that a particular set of program components led to improving student abilities from what could have been expected without the intervention. Criteria for evaluation often involve qualitative instruments that assess attitudes and level of satisfaction regarding the program by parents, teachers and students. Most often, evaluations focus on the degree to which the program was implemented adequately.

In the area of gifted programs for preschool and elementary, little empirical evidence exists for favoring one program over others. Children identified as gifted and participating in an early grade admission model, as opposed to acceleration or enrichment one, have not been compared in general or specific talent areas with relevant factors controlled. The problem is further exacerbated by issues concerning identification of gifted children in this age range.

An emphasis on creativity also prevails in the literature which lies outside the scope of the review. The emphasis exists partly due to the limits inherent in intellectual performance tests with regard to identification of the young and gifted. The predictive validity of creativity tests in relation to giftedness later in the life span is not well established. Although some of the above issues were covered partly in the earlier report submitted to the Advisory Council, they are considered noteworthy at this point. In effect, when considering the state of the art in differentiated programming for the young and gifted, it is difficult to ignore the current emphasis on creativity. With young children, particularly preschoolers, programs focusing on developing creative potential abound. Research on implemented programs using a structured approach, with respect to developing specific or general abilities, is scant. However, several approaches exist that are not exclusively or largely centered on creativity which appear relevant. They have been around for sometime but rarely have they received attention in the gifted literature as viable programs for implementation. The reason(s) for this gap lies in that such approaches have been used primarily with disadvantaged or regular children. Yet, there is no data to suggest that such approaches are not effective for the gifted, (assuming giftedness is established at this age). Such models have been disseminated widely under the names of their authors, Fuerstein, Montessori, Bereiter-Englemann and others.

Examples of Elementary Programs

In efforts to provide a differentiated curriculum for identified gifted children in regular classes, Project Ascent was developed in North Carolina. The program description contains an extensive section on basic, affective and creative curricula, each with appropriate activities. Staff training and identification procedures are also described. An evaluation component is also delineated with plans for comparison with control schools. However, such evaluation has not been completed and it centers on teacher's response to students' gifts and talents. In sum, evaluation plans do not include performance data on general and specific outcomes of this specific programs as compared to others.

Social Studies

The Oregon State Department of Education has supported work on a document describing a differentiated social studies curriculum for K-12 students. It is a guide for program specialists and teachers who want to design a goal-based program covering both cognitive and affective areas. An appendix is included that focuses on building a social studies curriculum for exceptional students. Evaluation guidelines are described. Again, this is a model that is described as useful and subject to adoption by others without direct evaluations of student performance.

A substantial body of reports can be found in this literature that provides guidelines for providing differentiated curriculum and programs for the gifted. These are "how to" reports from various state's school districts and systems that describe; identification,

curriculum guides, acceleration and enrichment programs, objectives, activities, sample evaluation forms for workshops and student, teacher and parent surveys. Descriptions of the physical environment, materials, schedules, lesson plans and discussions of differentiated programming also abound. for example, Delahanty (1984) describes a gifted program for Kindergartners and techniques of evaluation. Reis and O'Shea (1984) describe an enrichment program for gifted students (K-4) based on Renzulli's Triad Model consisting of exploratory activities, experiences to develop cognitively and independent investigation experiences. However, comparative investigations or objective evaluations of student standardized test performance are practically non-existent. That is, we do not even have at this point repeated, systematic measures of participating student's abilities that allow for comparisons between different program implementation models or growth patterns across intellectual domains.

Inter-Age Grouping

One approach to gifted education for the young involves providing for their needs by grouping them with older children. In a study involving gifted first graders in N.Y., significant differences were noted in a quasi-experimental design. Eighteen first graders (mean I.Q. 119) were assigned to two interage classes containing first, second and third graders (mean I.Q. 120) participated in two regular first grade classes. The results showed a significant advantage on word discrimination, arithmetic for the interage condition. The California Test of Personality was used to

explore potential differences in social adjustment for the two groups but none were found. Parents responded favorably to questions concerning their children's response to school in both conditions.

While the above results appear promising, no follow-up research has been reported for this approach that provides a clear description of curriculum differences in the two groups. Further replications are needed with larger samplers to determine if the significant (Metropolitan Achievement Test) differences found are maintained in different settings.

Theoretically, the interage grouping approach to gifted education appears promising.

According to dialectical views on intellectual development, placing students in learning situations with more advanced individuals helps to accelerate certain cognitive functions that are in the process of being completed (Vygotsky, 1978). However, research is needed in this area that controls for the ability levels of older children in these classes as well as treatment/control differences in content and instruction.

Resource Rooms and Pull-Out Models

A look at pull-out programs for the gifted reveal that this is the most common practice, particularly at the elementary level. In the Richardson study (1984), 70% of Districts responding the survey reported having such a program in operation. Practitioners in the field consider that this program serves to supplant regular classroom work, which should eliminate making up missed work, or to

relate directly to regular programs in an enriched sense. This differentiation appears important in that many oppose having such programs focus on special skills that are not part of the regular curriculum. Regular teachers often resent this practice which makes possible smaller class sizes for some, as well as the freedom of such programs to focus on different objectives. Cox and Daniel (1984) review of these programs is qualitative and based on teacher and program directors' reaction and opinions. They note that the strength of such programs is that they allow high ability students to interact together as well as with regular students. The disadvantage centers on gifted children not being separated enough of the time. Based on these criteria, the authors conclude that the pull-out model has served its purpose but that its time to move on.

As will be noted later, the value of any given approach or type of staff training will depend on the extent to which children's developmental functions are assessed and fostered. The degree to which learning environments or programs can be designed to help teachers attend and respond to individual differences in learning, regardless of ability level, will likely influence program effectiveness.

A recent report by the Department of Evaluation and Research in Des Moines Public Schools, Iowa describes the results of a resource room program for gifted education. Students participating an average of 4 hours a week were evaluated for affective, non-academic responses to the program. So were parents and teachers, all three groups provided positive feedback. A partial pull-out schedule was

used for the 1982-1983 year. The program was found effective (on a non/academic basis) and incorporated into the 1983-1984 school year's offerings at one independent community school district.

Staff Development Issues

The backbone of any directive in special education programming will be the quality of training given to those whom will out program implementations. The effectiveness of a given program approach will be a function of the amount and quality of education provided for teachers to a considerable extent since other factors, such as student ability and background can be controlled. There are several ways to evaluate teacher inservice programs and p=special training. The two most commonly found are the degree to which the teacher masters the knowledge and skills stressed in the program and the extent to which student skills stressed in the program and the extent to which student performance is improved relative to a control condition. Weslander (1983) found a curvilinear relationship between the number of resource teacher support visits after a two and half training program and a measure of student performance. The study represents one of the few well designed studies in the field. The student performance measure, however, was limited to the number of Type III activities that students engaged in and the grades given to them by the teachers using Renzulli's Enrichment Triad Model (1977). The results showed that once a month supportive visits by resource teachers (experts) produced as many student creative products as once a week visits. Both of these conditions led to slightly more student products than a third

control condition consisting of teachers who were given a general orientation session and materials but no follow-up visits. However, the quality of student products did not vary across the three experimental conditions.

The inservice program did increase the participants' knowledge about teaching the gifted and talented as measured by post-survey scores. That is, the more contact resource teachers had with the trained teachers, the more they learned about teaching strategies and instructional activities for the gifted. With respect to the absence of a treatment effect on the quality of student products, the author suggests that gifted students' motivation is such that they are able to develop and carry out type III activities regardless of teacher's expertise and knowledge.

In sum, the results of this strategy are useful in determining strategies for teacher training in the future and suggests that a moderate amount of support for program participants is related to the number, but not quality of student products. Additional student outcome measures need to be considered in future research efforts, however, before these findings can be generalized.

Review of Reviews of Gifted Education Programs

Recently a comprehensive review of educational programs for gifted students has been reported in the literature in thirteen different segments known as the Richardson Study. It represents a massive effort to examine the educational opportunities for able learners in 16,000 school districts across the nation. The goals of this study are similar to those of the Advisory Council on Gifted

Education in the state of Kentucky. In particular, it asks what are the characteristics of programs for able learners, where are they located and which are the most effective and adaptable in general terms.

The study used a survey questionnaire to which 400 schools and 1,600 school districts responded. It was sponsored by the Richardson Foundation of Ft. Worth, Texas to guide decisions inherent in developing programs for gifted students in Texas. Unfortunately, the study relies heavily on an anecdotal approach that is filled with advocacy statements. Evaluations of various programs are based on teacher and student reactions and lacks systematic or quantitative approach. A glance at the summary of recommendations attached to this report shows basic agreement with those submitted to the Advisory Council by the author in terms of identification. In terms of programming, the Richardson Study leaves a lot to be desired, given the scope and support it had, for example, the effects of different approaches on a given set of student outcomes does not appear to have been sought systematically. It does provide an extensive list of suggestions to be taken into consideration that are common knowledge in the field; in terms of staff development, again a prescriptive set of recommendations are given with little regard for general educational principles to be employed. Finally, the recommendations given with respect to evaluation are inadequate, particularly when the authors suggest that the evaluation design should be planned as a program is being developed. In sum, the Richardson Study represents a state

of the art review that is consistent with what has been noted in this review. The latter will now focus on areas that appear relevant in deciding what directions to take in planning a large scale program in this field.

III. Summary and Conclusions

In sum, to the interested consumer of advanced intellectual programming that currently asks, "What are the best program models and components for gifted education" the answer is not clear. Unfortunately, nor does it appear, on the basis of current research work in this area that an answer is in the making. This is particularly the case with younger populations.

The state of the art in this field can be regarded as pre scientific from Kuhn's (1967) perspective. That is, since identification of gifted individuals remains a subjective, nebulous issue, it is difficult to ascertain from the literature the relative value of various programs on intellectual development in general or specific terms. Maturation still represents a very real threat to the validity of evaluations lauding the benefits of various models. We don't know about the effects of these state of the art gifted programs in general terms, particularly in comparison with no special programming at all when giftedness or intellectual performance are considered.

Preschool programs aimed at advancing and supporting intellectual development are generally referred to as enrichment models that provide goal-based experiences. The goals typically consist of a blend of higher-order thinking processes, knowledge

attainment patterns, discovery-based strategies. The above goals tend to become fuzzy, and hence difficult to assess as outcomes, net of intra-individual abilities. Hence, relatively little is known about differences in gifted education program effectiveness. The focus of the present review centers primarily at examining the existing evidence in the context of instructional and cognitive developmental theory. To arrive at a set of recommendations for the Advisory Council, several common problems and themes have to be identified across current and recent programs. The present state of the art in program design does not allow a definitive "meta-analysis" or summary of effectiveness of implemented models. This is because of prevailing practices that overlook the need for adequate empirical evaluation. Part of the problem resides possibly in the assumption that giftedness will flourish in a wide band of benevolent, responsive learning environments. The latter, however, comprise primarily supportive, subsidiary functions to a potentially largely channalized process of superior intellectual development. Certain recommendations or at least directions can be offered in context with the above points nevertheless.

IV. Recommendations

On the basis of the above data, a number of suggestions and options appear in order:

a) both enrichment and acceleration strategies seem to meet the needs of the gifted and may be effective if care is taken to individualize learning situations.

b) preschool programs for the gifted should employ liberal entrance requirements since a number of developmental functions and attitudes appear to be in the process of completion. It may be that research such as that reported above may have found significant program effects if greater variability in student abilities and talents had been allowed. However, special programming for K-3 high ability children appears to be more important than for preschool programs at this time (Schweinhart 1985).

c) interage grouping and early entrance strategies should be employed with gifted students based on readiness criteria. This would place a minimal load on existing educational structures initially. As more age variability becomes established and permitted in the presently age graded educational system, socio-affective risks can be minimized. Support programs for the gifted can be designed by school and educational experts, with training for teachers, in monitoring and helping the gifted through enrichment programs while they are "accelerated" within the existing system.

d) teachers in regular and advanced programs can be trained and encouraged to be receptive and aware of younger but intellectually advanced students and their needs.

In sum, the problem to be addressed by policy-makers in this area is one known in academia as that of "the match" (Hunt, 1961), a concept that is applicable at all ability levels and is supported by cognitive - developmental theory (Piaget, 1964; Vygotsky, 1978). Preschool programs for the gifted should be oriented towards

developing manifested talent to the next level as well as across the domains of learning (Gagne, 1972). Those preschoolers that are sufficiently advanced may go on to special kindergarten that have been certified as qualified to meet the needs of younger children in general and specific ability areas.

e) such strategies may include well designed and monitored combinations of pull-out schedules, enrichment centers and special classes and schools, depending on available resources.

f) finally, such designs should be based on matching learning experiences to individual capabilities, something which will shift testing from selection to diagnostic and evaluative functions in emphasis.

Finally the current literature on ability grouping strongly supports the case for special services with gifted children, particularly in terms of academic achievement and positive attitudes towards learning. However, it should be noted that ability grouping appears to have little effects for students of average and below average ability (Kulik & Kulik, 1982). These authors found that their academic performance by close to one half a standard deviation (.40) compared to a negligible amount for lower ability students in special groups and gifted children in mixed ability classes. In sum, ability grouping, as contrasted with mixed ability classrooms, does not produce important advantages in intellectual performance except for students of high ability. These results were based on a meta-analysis of over fifty studies in the literature on ability

grouping. However, most of the studies examined involved special honors classes in secondary school subjects which leads to some reservations regarding the results. There is reason to assume that similar gains are possible with younger students based on Ekstrom's (1961) review of this literature.

Although considerable debates have prevailed in the area of ability grouping since the first empirical study with gifted students by G.M. Whipple in 1916, it seems fair to state that tracking high ability students is effective. Also, grouping high ability students appears to improve students attitudes regarding specific academic areas, something that is important for policy makers. Both, attitudes and intellectual skills are outcomes of the learning process that are intertwined and possibly interdependent, Hence, a variety of vehicles for grouping high ability students in specific and general areas of intellectual performance need to be considered. As noted earlier in the section concerning various approaches to grouping or separating the gifted, a continuum exists from clustering within classes all the way to providing special schools. Since giftedness appears subject to environmental conditions pertaining to learning, particularly early in life, the following points can be made:

1. The provision of special educational services for the gifted should be approached programatically in context with available resources, training, program development and assessment strategies over time.
2. Initially it may be advisable to implement an identification program for grouping purposes.

3. Once target groups are established, programming can be initiated along two lines, depending on available resources;
 - a) children who are advanced in general or specific areas may attend already available programs at the next age level for limited periods of time. Support service for interage grouping will need to be designed, implemented and evaluated.
 - b) as teacher training programs are established, special classes within schools and districts can be organized that can provide enrichment as well as acceleration on an individualized, systematic basis.
4. Finally, for children that are clearly exceptional in a given area of talent(s), whose needs may extend beyond the limits of extant programs, special schools and pull-out experiences with more advanced experts can be established in the future. Such an approach would be useful in not only developing existing potential and providing a responsive learning environment for those most in need but in maximizing motivation and strengthening work habits and skills at a critical period in intellectual development

In terms of identifying the most viable program found for gifted children below third grade, the Astor program appears most promising in showing substantial gains in academic achievement. Although the program description was vague, a closer analysis may be warranted before designing K-3rd grade programs. The Astor program participants made very significant gains on standardized tests and were screened under very conservative criteria.

In sum, the present review has attempted to examine findings as well as description concerning programming for young gifted children. In doing so, an effort to underline guiding principles for future program design has been made. The latter have been incorporated at the end of individual sections and in the above summary. While considerable room for research and development in this field exists presently before any major model or approach is implemented state-wide, a number of recommendations have been put forth that may serve to guide initial efforts in this field. It appears safe to suggest that we know enough at this point to begin implementing extensions of our educational system to meet the needs of high ability students. However, such directive will continue to be based on general and sound principles that have emerged overtime independently of the gifted and talented literature. Such principles are based on cognitive-developmental theory and practice and still require careful attention in program design. In concluding, whatever training approaches and program models are designed and implemented in our state for high ability students, it is crucial that they remain faithful to what we know about learning theories, objectives and conditions in the instructional process.

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